



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,838	10/22/2003	Danny Marshal Day	10888.105001	5403

7590 01/19/2006

W. Scott Petty, Esq.  
KING & SPALDING LLP  
45th Floor  
191 Peachtree Street, N.E.  
Atlanta, GA 30303

EXAMINER
----------

RAETZSCH, ALVIN T

ART UNIT	PAPER NUMBER
----------	--------------

1754

DATE MAILED: 01/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/690,838	Applicant(s) DAY ET AL.	
	Examiner Alvin T. Raetzsch	Art Unit 1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 13, 15, 16, 19 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14, 17 and 18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-20 are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/4/04; 10/12/04</u> | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 1754

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-12, 14, & 17-18, drawn to a carbon product and process, classified in class 423, subclass 445R.
  - II. Claims 13, 15-16, & 19-20, drawn to a fertilizer product, classified in class 71, subclass 24.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention of the carbon residue has separate utility such as a filler or use in an ink composition. See MPEP § 806.05(d).

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

3. During a telephone conversation with Scott Petty on 1/3/05 a provisional election was made without traverse to prosecute the invention of the charcoal residue, claims 1-12, 14, & 17-18. Affirmation of this election must be made by applicant in replying to this Office action. Claim 13, 15-16, & 19-20 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

*Claim Rejections - 35 USC § 112*

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 2 & 3 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation in claim 2 of “*no* more than 2 minutes” is not present in the specification. 2 minutes as a maximum pyrolyzation time was not present in the original disclosure (prior to preliminary amendment), and is therefore new matter. Also, the limitations of claims 2 and 3 are not described in the specification.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1, 2, & 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 describes a process of pyrolyzing for no more than 2 minutes in order to maximize the formation of surface acid groups, and claim 3 states that heating the

Art Unit: 1754

residue for longer than 10 minutes will minimize the formation of surface acid groups.

Both statements are false. The longer a carbon residue or biomass is heated in the presence of oxygen, the greater the formation of acid groups that will occur. This improves the absorption of compounds like ammonia (see Asada [2001], page 478), a property that is desirable in the present disclosure.

Claims 1 & 3 are not completely comprehensible in another respect. The step of "contacting all or a portion of the solid carbon charcoal residue, ammonia, and water with an" is not completely understood. What ammonia and water? Is the ammonia and water contacted with the residue before contact with the off-gas, or is the ammonia and water in the off-gas? The chronological location of the step disclosed in claim 3 is also not easily understood. Is this an additional step after pyrolyzation or a continuation of such?

8. Claim 7 recites the limitation "the hydrogen stream" in line 3. There is insufficient antecedent basis for this limitation in the claim with respect to its dependency on claim 1. Claim 1 does not mention a hydrogen stream. For the purpose of this action, claim 7 will be treated as if dependent on claims 5 & 6 only.

#### *Claim Objections*

9. Claims 8, 10-12, 14 & 17 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from another multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not

Art Unit: 1754

been further treated on the merits. The scope of these claims, however, is addressed in the claim rejections below.

All in all, the claims need to be carefully rewritten to overcome a number of errors and deficiencies, but in such a manner as to not introduce new matter as many of the limitations do not appear in the original specification.

*Claim Rejections - 35 USC § 103*

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1, 2, 8, 9, 10, 17, & 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asada et al. (2001) in view of Richter et al. (US 4,915,921).

Claims 1, 2, 8, 10, 17, & 18: Asada teaches a process for the optimizing a carbon char product of pyrolyzation for the absorption of ammonia. Richter teaches using a carbon absorption agent (coal in example 1) along with ammonia to reduce the NO<sub>x</sub> and sulfur dioxide in an exhaust gas. It would have been obvious to one of ordinary skill in the art to use the charcoal production techniques taught by Asada to make an absorption product for use in the process of Richter in order to maximize the ammonia

Art Unit: 1754

absorption, thereby improving the exhaust gas treatment. The pyrolyzation time of less than 2 minutes is not taught, but the preferential absorption of a base is (by Asada). In addition, the less than 2 minutes limitation is not given patentable weight as described above in the USC 112 rejections.

Claim 9: Although Richter does not teach the absorption of carbon dioxide, carbon dioxide is present in exhaust gas and the absorption agent described above would have come in contact with the compound.

12. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asada et al. (2001) in view of Richter et al. (US 4,915,921) as applied to claim 1 above, and further in view of Vaughn et al. (US 6,342,129).

Vaughn teaches an additional step of heat-treating the pyrolyzed charcoal at a temperature above 600°C. It would have been obvious to one of ordinary skill in the art to add the heat treatment step taught by Vaughn in order to activate the carbon for improved sorption.

13. Claims 5 & 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asada et al. (2001) in view of Richter et al. (US 4,915,921) as applied to claim 1 above, and further in view of McMullen et al. (US 6,039,774).

McMullen teaches purification and reuse of the off gases from a pyrolysis process, specifically one that generates activated carbon. Separation of pure hydrogen from the waste gas is specifically taught (Columns 3 & 4). It would have been obvious to one of ordinary skill in the art to implement the process taught by McMullen on the

Art Unit: 1754

process as described with respect to claim 1 above in order to harness a valuable product from the waste gases produced.

14. Claims 5 & 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asada et al. (2001) & Richter et al. (US 4,915,921) in view of McMullen et al. (US 6,039,774) as applied to claims 1, 5 & 6 above, and further in view of Clancy (US 1,352,179).

Clancy teaches making ammonia from hydrogen and nitrogen. It would have been obvious to one of ordinary skill in the art to implement the process taught by Clancy on the process as described with respect to claims 5 & 6 above in order to produce the ammonia needed for previous parts of the process, effectively creating a recycle system for part of the off gas.

15. Claims 4, 11, 12, & 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asada et al. (2001) in view of Richter et al. (US 4,915,921) as applied to claims 1, 8, & 10 above, and further in view of Glaser et al. (2002).

Glaser teaches the use of charcoal products in agriculture as fertilizers and the addition of fertilizer components to the charcoal. Glaser does not teach the implementation of the charcoals in waste gas absorption before their utilization as fertilizers. It would have been obvious to one of ordinary skill in the art to use the charcoals that were used in the absorption of wasted gases in the fertilization art in order to reduce waste and effectively recycle the carbon to the environment at the same



Art Unit: 1754

time improve crop quality. The reactions creating ammonium bicarbonate and ammonium salts in the pores of the charcoal would have occurred in such a process.

### *Conclusion*

The process disclosed in the current application is a compilation of known processes, and this point is disclosed in the specification. The combination of processes is new, and the spirit of the invention (as described in Figure 1, the abstract, and the last paragraph on page 13 of the specification) may be patentable. If the claims were rewritten to describe the entire scope of the process in one claim (including the limitation of the withdrawn claims, thus describing the entire process from beginning to end), and a demonstration of commercial success is shown, the restriction may be lifted and the application may become allowable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alvin T. Raetzsch whose telephone number is 571-272-8164. The examiner can normally be reached on 9-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ATR



STUART L. HENDRICKSON  
PRIMARY EXAMINER